

Florida peninsula.—1st, 7th, 8th, 9th, 31st.
Eastern Gulf states.—1st, 4th, 30th.
Western Gulf states.—5th, 6th, 8th, 10th.
Rio Grande valley.—9th, 27th.
Tennessee.—5th, 6th, 8th.
Ohio valley.—1st, 3d, 4th, 6th, 25th, 26th, 27th, 30th, 31st.
Lower lake region.—2d, 6th, 27th, 29th.
Upper lake region.—2d, 10th, 14th, 26th, 27th.
Extreme northwest.—11th, 30th.
Upper Mississippi valley.—9th, 29th.
Northern slope.—7th.
Middle slope.—8th, 9th.
Southern slope.—4th.
Southern plateau.—1st, 4th, 27th.
North Pacific coast region.—3d.
Middle Pacific coast region.—1st, 28th.

MIRAGE.

Block Island, Rhode Island: on the 15th, the coast of the mainland appeared as perpendicular cliffs rising to an apparent height of seventy feet, and vessels were observed with their images, about forty feet above them, in upright positions.

Huron, Dakota: at sunrise on the 30th, a remarkably distinct mirage was observed, showing a clearly defined lake having shores dotted with farm houses, grain stacks, herds of cattle, etc. The phenomenon was a reflection of Lake Benton and the surrounding country, lying about forty miles east of Huron. The view both up and down the Dakota river was unobstructed for many miles, and presented a scene very rarely witnessed in this region.

Mirage was also observed at the following stations:

Yates Centre, Kansas, 8th.

Salina, Kansas, 20th.

Marquette, Nebraska, 4th, 28th.

MISCELLANEOUS PHENOMENA.

SUNSETS.

The characteristics of the sky, as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from one hundred and sixty-two stations show 4,986 observations to have been made, of which four were reported doubtful; of the remainder, 4,982, there were 4,172, or 83.8 per cent., followed by the expected weather.

A peculiar appearance of the sky after sunset and before sunrise has been observed during the month of August, 1884. This phenomenon somewhat resembled that observed during the autumn of 1883, and the early winter months of 1884.

The following reports referring to this appearance have been received:

Alabama.—Professor P. H. Mell, Jr., director of the State Weather Service reports: "rosy sunsets were observed on clear days."

Arkansas.—Lead Hill, Boone county: sunset displays were observed on nearly every clear evening during the month, being especially bright on the 27th, 28th and 31st.

California.—Sacramento: a brilliant orange colored light covered the western horizon at sunset on the 31st.

San Francisco: the western sky was unusually red at sunset, and until 7.30 p. m. of the 31st.

Los Angeles: the western horizon presented a rosy red appearance after sunset on the 7th, 11th, and 15th. On the 26th and 27th, a bright red glow was observed after sunset.

Hydesville, Humboldt county: red skies after sunset were observed on the evenings of the 2d, 3d, 5th, and 31st; the display on the last-mentioned date being the most brilliant observed.

Colorado.—The observer on the summit of Pike's Peak reported red sunset on the 24th.

Dakota.—Webster, Day county: an unusually bright twilight

was observed on the 29th, lasting about forty-five minutes after sunset.

Huron, Beadle county: on the 4th the sky and sun had a blood red appearance, from the time the sun touched the horizon to thirty minutes afterwards.

Florida.—Archer, Alachua county: the sunrises on the 25th, 26th, and 27th, were as brilliant as the remarkable displays seen in December, 1883; the western sky at sunset on the 25th, 27th, and 29th, was also of unusual appearance.

Jacksonville: sky red at sunset on the 26th.

Georgia.—Forsyth, Monroe county: for thirty minutes before sunrise on the 29th, the eastern sky was of a deep vermilion color, surpassing in brilliancy any similar phenomenon seen at this place.

Atlanta: a red sky was observed at sunset on the 30th and 31st.

Illinois.—Swanwick, Perry county: the sunsets of the 30th and 31st were unusually bright.

Iowa.—Humboldt, Humboldt county: a beautiful sunset display was observed on the 22d.

Manchester, Delaware county: red sunsets were observed on the 4th, 5th, 22d, 25th, 29th, 30th, and 31st.

Muscataine, Muscatine county: brilliant red colors were observed in the eastern sky before sunrise on the 5th, 9th, 18th, 26th, and 30th; and the same phenomenon appeared in the west after sunset on the 5th, 9th, 10th, 18th, 25th, 29th, 30th, and 31st.

Kansas.—Manhattan, Riley county: twilights of unusual brilliancy and duration were noted on the evenings of the 29th and 30th.

Salina, Saline county: red sunsets, similar to those observed during the latter part of last year, appeared about the 20th.

Wellington, Sumner county: sunset afterglows were quite prominent on the evenings from the 27th to 31st; the colors were plainly defined and the duration of the displays was about one hour and forty-five minutes.

Kentucky.—Richmond, Madison county: red glows were observed in the western sky after sunset on the 5th, 18th, 29th, and 31st; the display on the last-named date was very bright and extended to the east.

Maine.—Portland: a peculiar, red sunset was observed on the 17th.

Massachusetts.—Somerset, Bristol county: at sunset of the 27th a red and orange colored glow covered the western horizon, paling toward the zenith; the display lasted forty-five minutes.

Michigan.—Manistique, Schoolcraft county: the sunset on the 26th was very brilliant, the colors being yellow near the horizon and red towards the zenith; the display continued for one hour after sunset. A bright yellow sunset was also observed on the 27th.

Minnesota.—Chester, Olmstead county: a beautiful twilight was observed on the evening of the 25th.

Saint Paul: from 7.50 to 9 p. m. of the 26th a segment of the southern sky for about 40° of the horizon and 20° altitude at the centre, was illuminated as though a great fire were raging in the distance. The red glow in the southeastern sky was also visible from 7.40 to 8.50 p. m. of the 27th, and from 7.55 to 9.10 p. m. of the 28th.

Montana.—Fort Assinaboine: the western sky was of a crimson color for thirty minutes after sunset on the 2d. The same appearance, lasting for twenty minutes, was observed after the sunsets of the 3d and 4th; and again for thirty minutes on the 7th.

Nebraska.—Red Willow, Red Willow county: a very brilliant sunset occurred on the 29th, the red glow extending to the eastern sky.

Yutan, Saunders county: the western sky at sunset on the 10th was of a brilliant red color; the same peculiarity was observed on the 29th, 30th, and 31st.

New Hampshire.—The observer on the summit of Mount Washington, reports that unusually brilliant sunsets of various colors were observed on the 7th, 12th, 17th, 18th, and 22d.

New Jersey.—Phillipsburg, Warren county: the sunsets of the 26th and 31st were quite red.

New Mexico.—Fort Craig: at sunset of the 29th the western horizon appeared covered with a reddish haze, resembling the red sunsets of last fall.

New York.—Le Roy, Genesee county: a red sunset was observed on the 31st.

Ohio.—The voluntary observer at Jacksonborough, Butler county, reports having observed brilliant sunrises and sunsets during the month, but does not specify the dates.

North Lewisburg, Champaign county: about the middle of the month the sky at sunrise and sunset was of a purple color.

Pennsylvania.—Fallsington, Bucks county: red skies were observed at sunset on the 23d and 26th.

Rhode Island.—Point Judith: a peculiar glow was observed in the western sky a few minutes after sunset on the 16th. Extending about 30° on each side of where the sun had set and to a height of 40°, the sky was of a delicate pink color; after lasting about thirty minutes the pink changed to red which remained visible for about twenty minutes. From 4 p. m. until sunset on the 26th, a portion of the western sky extending about 30° on each side of the sun, and from the horizon to a height of about 15°, was of dull reddish color. After sunset the colors changed to bright orange, pink, and afterwards to red. This display was one of the most remarkable that has been reported, being accompanied by streamers of red light similar to that of the aurora.

Tennessee.—Estill Springs, Franklin county: from 6.45 to 6.55 p. m. on the 8th a rose colored band, from 10° to 15° in width extended from the point on the horizon where the sun had set to a height of 45°. On the south side of this band were observed several narrower bands which were parallel with the first. The same phenomenon was witnessed on the evening of the 19th, being visible from 6.48 to 7.54 p. m., and brightest at 6.51 p. m.

Ashwood, Maury county: brilliant twilight colors, lasting until 8 p. m., were observed on the evenings of the 30th and 31st.

Knoxville: on the 11th the western sky was of a bright pink color for about thirty minutes after sunset. On the 15th the same phenomenon was observed, the color extending to about 45°.

Nashville: the remarkable sun glows which were observed during October, November, and December, 1883, reappeared during August, and were observed on the following dates: 1st, 2d, 4th, 5th, 6th, 12th, 13th, 21st, 27th, 30th, and 31st.

The following extract is taken from the August report of the "Tennessee Weather Service."

Red or yellow sunsets were observed as follows: At Grief, 28th, 31st, a beautiful and clear reddish glow for more than an hour after sunset; Parksville, 28th; Cookville, 30th, 31st, pink color; Manchester, 18th, beautiful yellow; Hardison's Mills, 4th, 12th, 25th, red; Hurricane Switch, on nineteen days; Henderson, 29th and 30th, crimson and yellow; Trenton, 28th, 29th; Union City, 4th; Dyersburg, 21st, 28th, 31st; Woodstock, 30th, 31st.

Texas.—Galveston: red sunsets on the 27th and 29th, and red sunrises on the 30th and 31st.

Indianola: a peculiar redness of the sky was observed at sunset of the 26th.

Cleburne, Austin county: green sky and yellow streamers were observed at twilight on the 30th, and a red twilight was observed on the evening of the 31st.

Virginia.—Variety Mills, Nelson county: sunsets, similar to those observed last autumn, occurred on the 13th, 14th, 15th, 18th, 19th, 20th, 26th, and 31st.

The following extract is taken from "Knowledge," (a scientific journal, conducted by Professor Richard A. Proctor, and published in London, England), of August 15, 1884.

"Some gorgeous sunlight effects," says the *Standard*, "have been observed over the Yorkshire wolds for several nights past. The sky has been one mass of richly-blended colours, commencing at the horizon with a broad belt of deep yellow light, and then tier above tier of orange and purple, the latter colour predominating in horizontal streaks, whilst the sky above was flooded with a magnificent glow from the setting sun."

SUN SPOTS.

Professor David P. Todd, director of the Lawrence Observatory, Amherst, Massachusetts, furnishes the following record of sun spots for August, 1884:

Date— Aug., 1884.	No. of new		Disappeared by solar rotation.		Reappeared by solar rotation.		Total No. visible.		Remarks.
	Gr'ps.	Spots	Gr'ps.	Spots	Gr'ps.	Spots	Gr'ps.	Spots	
1, 1 p. m.	0	5†	0	0	0	0	3	35†	
3, 6 p. m.	1	5†	0	0	1	2	4	40†	
5, 8 a. m.	1	3	0	0	0	0	3	8	
8, 11 a. m.	2	8†	0	0	0	0	5	20†	
11, 3 p. m.	0	0	0	0	2	8†	2	25†	
15, 8 a. m.	0	0	0	0	0	0	2	25†	
17, 12 m.	1	5	0	5	1	5	3	15†	
18, 9 a. m.	0	0	0	10†	0	0	3	15†	
19, 7 a. m.	3	15†	0	5	1	3	6	25†	
23, 11 a. m.	1	30†	0	0	0	0	5	60†	Many of the spots small.
24, 9 a. m.	0	0	0	0	0	0	4	50†	Do.
26, 4 p. m.	2	20†	0	10†	2	5	6	60†	Do.
27, 12 m.	1	2	0	10†	0	0	7	50†	Do.
31, 11 a. m.	1	25†	0	0	0	0	3	40†	

Faculae were seen at the time of every observation. †Approximated.

Mr. William Dawson, of Spiceland, Henry county, Indiana, furnishes the following record of sun spots: 1st, 8 a. m., four groups, ninety-five spots, very large group west of centre; at 8.20 a. m. of same date there were observed five groups, one hundred and twenty spots, the large group west of the centre having seventy-five spots. 2d, 8 a. m., five groups, one hundred and twenty spots, very large group of seventy-five spots west of centre. 5th, 9 a. m., three groups, twenty-eight spots, very large group near the west edge. 6th, 8.15 a. m., four groups, sixteen spots, faculae very prominent. 7th, 8.45 a. m., four groups, twelve spots. Owing to the absence of observer no observations were made after the 7th.

DROUGHT.

Arkansas.—Springfield, Conway county: a severe drought prevailed during the month, causing much injury to the cotton crop in this part of the state. The entire rainfall for the month was less than one-half inch.

Little Rock: during the latter part of the month the weather was intensely hot and dry, and the crops suffered seriously.

Illinois.—Nokomis, Montgomery county: a copious rain fell on the 20th, which was of incalculable value to the crops. Previous to the above date the crops suffered seriously on account of drought, and when the rains came, in some instances they were too late to be of benefit.

Nashville, Washington county: abundant rains fell on the 18th, after a drought of nearly seven weeks duration.

Reports from Vandalia, Fayette county, on the 20th stated that no rain of consequence had fallen in that locality for six weeks preceding that date, and that the crops were suffering seriously.

Hillsborough, Montgomery county, 20th: the drought which has prevailed in this section for the last six weeks caused great damage to the corn crop. The pastures dried up, and stock suffered on account of scarcity of water.

Collinsville, Madison county: drought prevailed in this vicinity from July 20th to August 19th.

Shelbyville, Shelby county: after a drought of several weeks' duration an abundant rainfall occurred on the 20th.

Shawneetown, Gallatin county: a much needed and copious rain fell in this vicinity during the night of the 25-26th.

Indiana.—Greensburg, Decatur county: this region, after suffering from a protracted drought, was visited by rains on the 21st and 22d.

Clinton, Rush county: the month was remarkably dry: rainfall only 0.75 inch. The corn crop has been materially injured.

Spiceland, Henry county: August was unusually dry, only 0.40 inch of rain having fallen during the entire month.

Sunmau, Ripley county: the rain of the 21st terminated in this vicinity the severest drought that has occurred in many years.

Vevay, Switzerland county: the weather during August was very dry, the rainfall for the month being 0.54 inch. The crops suffered serious injury in consequence of drought, and owing to scarcity of water in the cisterns it was necessary to haul water from the river for household uses.

Iowa.—**Maynard, Fayette county:** owing to the extremely dry weather during August the small streams became entirely dry.

Kansas.—**Yates Centre, Woodson county:** at the close of August the wells and cisterns were low and the crops were suffering in consequence of drought.

Louisiana.—**Grand Coteau, Saint Landry parish:** severe drought prevailed in this section during August, causing serious injury to corn, cotton, and sugar cane.

Maryland.—**Fallston, Harford county:** from August 8th to 28th, there was no appreciable rainfall, but rains fell from the 28th to 31st, which were of great benefit to the crops.

Michigan.—**Hillsdale, Hillsdale county:** the drought which prevailed during August in this part of Michigan, was the severest that has occurred for many years. The entire rainfall for the months of July and August of the present year was 1.78 inches. In some localities at the close of the month, the ground was dry to a depth of from two to four feet.

Mottville, Saint Joseph county: the streams and ponds in this vicinity at the close of August, were lower than they have been for many years. Only 0.70 inch of rain fell at Mottville during the month.

Thornville, Lapeer county: drought prevailed in this part of the state during August, the rainfall for the month being only 1.47 inches.

Port Huron: drought prevailed in this part of the state during nearly the whole month. The monthly rainfall was only 1.28 inches, being less than one-half of the average amount. On the 28th, 0.85 inch of rain fell.

Missouri.—**Cape Girardeau, Cape Girardeau county:** the heavy rainfall on the 28th was of great benefit to the crops which were suffering from drought.

Joplin, Jasper county: the heavy rainfall in this locality on the afternoon of the 20th was of great benefit to the crops which were suffering from drought.

Marshall, Saline county: a much needed rain fell in this vicinity on the 18th.

New Hampshire.—**Antrim, Hillsborough county:** previous to the 22d the month was very dry, and the wells in this vicinity began to fail. After the 22d the rains were plentiful.

New York.—**Palermo, Oswego county:** previous to the 21st the weather was very hot and dry; wells and streams began to fail and vegetation suffered seriously. The rains from the 21st to the end of the month terminated the drought.

Ohio.—**McArthur, Vinton county:** a copious rain fell on the 21st, greatly benefiting the crops which had been suffering for rain for many weeks. Numerous fires, caused by sparks from locomotives, occurred along the railroad tracks, and destroyed considerable property.

Cleveland, 20th: the extremely warm weather during the last ten days has seriously injured the crops and pastures in this vicinity. The rivers and streams are very low and many springs have failed. The roadways through central Ohio are covered with dust to a depth of several inches.

Cincinnati, 20th: the drought which has prevailed during the last six weeks has caused great injury to the various crops in the southern portions of Indiana and Ohio, and in northern Kentucky.

Columbus: the rainfall during August was only 0.70 inch. A total failure of the crops is threatened. The pastures have failed, and cattle are being fed with winter hay.

College Hill, Hamilton county: very dry weather prevailed during the month, only 0.70 inch of rain having fallen.

New Athens, Harrison county: during a greater part of the month there was an almost entire absence of rain. The streams and wells dried up and the pastures failed.

Province of Ontario.—**Goderich, 20th:** the weather continues

dry and hot, and vegetation is suffering. No rain has fallen for several weeks and serious brush fires are burning in the surrounding country.

Texas.—**Fort Davis, Presidio county:** the drought which prevailed in this part of Texas previous to the 18th, was the severest that has been experienced here for many years. Many of the cattle ranges were without pasturage or water. The rains of the 18th and succeeding days ended the drought, and were of incalculable benefit to the cattle interests in this county.

Rio Grande City: no rain fell in this vicinity during August. The first crop of corn harvested in June and July was very poor. At the beginning of August, the time for planting the second crop, planting was rendered impracticable on account of the dryness of the soil. In this vicinity several tests were made and the ground was found to be perfectly dry to a depth of six feet. The pastures for many miles around Rio Grande City failed entirely, and wells that were never before known to fail, became dry. Stock suffered seriously on account of scarcity of water and poor pasturage.

Indianola: severe drought prevailed during August. In the prairies, west of this place, the water in the creeks and "water holes" became very low, and in many instances vegetation was completely killed.

Austin, Travis county: there was an almost total absence of rain during August, in consequence of which the cotton crop promises a poor yield. At the close of the month pasturage was very poor, and water supply for stock was very limited.

Reports from **Clarksville, Red River county,** state that the crops in that region were promising, and the rains during August were plentiful.

Virginia.—**Lynchburg:** the damaging drought which prevailed during the seven weeks preceding the 29th was ended by the copious rain of the above date.

Wytheville, Wythe county: severe drought prevailed in this part of Virginia during August.

EARTHQUAKES.

The following extract is from the "New York Herald" of August 5th:

LONDON, ENGLAND, August 4, 1884.—Severe earthquake shocks were felt yesterday at Foca (probably Fetha), in Bosnia.

Santa Barbara, Santa Barbara county, California: three very slight earthquake shocks occurred at about 1 a. m. of the 4th; there was also a slight shock on the night of the 2-3d.

The following extract is taken from "Nature," of August 14, 1884:

Earthquakes have been frequent and widespread during the past few days. The inhabitants of the towns and villages along the whole range of the Alban hills were alarmed at 2 a. m. on August 7 by a sharp shock of earthquake, followed by another at 3.15 a. m. The direction taken by the wave was through Velletri, Nemi, Ariccia, Albano, Castle Gandolfo, and Rocca di Papa, and Frascati. The shocks were most severely felt at Rocca di Papa, but no damage was done beyond the falling of two chimneys at Ariccia. At 3.30 a severe shock, quickly followed by another, was distinctly felt at Rome, and that which shook the Alban hills extended as far as Porto d'Anzio, on the coast.

On the afternoon of Sunday, August 10th, an earthquake occurred, which, from the reports that have been received at the Signal office, appears to have generally affected an area extending along the Atlantic coast from northern Massachusetts to southern Delaware, and inland, to points in southeastern New York, and in the eastern portions of Pennsylvania and Maryland. Reports from Richmond, Virginia, state that at about the time of the occurrence of the earthquake reported from other points, a slight shock was experienced in the western part of that city. Titusville, Crawford county, in northwestern Pennsylvania, is the most westerly point at which the shock is reported to have been felt, and Brattleborough, Windham county, Vermont, is the most northerly station from which reports have been received at this office.

Professor C. G. Rockwood, jr., of Princeton, New Jersey, reports the following: "On Sunday, August 10th, between

seven and eight minutes after 2 p. m., the middle and eastern states experienced a decided earthquake shock more severe and extensive than has occurred in that locality for some years. The area affected extends along the coast states from Washington, District of Columbia, and Baltimore, Maryland, to Portland, Maine, and Burlington, Vermont; and on the west may be bounded by a nearly straight line from Burlington to Harrisburg, Pennsylvania. The intensity was greatest in the vicinity of New York City, which is also about the centre of the district affected. It nowhere did any damage beyond breaking crockery and occasionally cracking a house wall; no bodily injury occurred, although it is stated that one or two deaths resulted from the mental effect of fright upon persons in feeble health. The time was about 2 hours 7½ minutes p. m., eastern standard time. Several good and close time observations have been reported, but it is not yet possible to say whether they indicate a progress of the wave in any particular direction or not. So far, as yet compared, all the reports seem to point to the formation of a geological fault in the rocks of the earth's crust somewhere in the neighborhood of New York Bay as the probable origin of the vibration."

The following reports concerning the earthquake above referred to have been received:

Connecticut.—New Haven: at 2.15 p. m. (local time) of the 10th an earthquake occurred in this city and in the adjacent towns. There were two distinct vibrations, the first shock being of about ten seconds duration. The disturbance resembled the jar caused by the movement of an unusually heavy train, and was felt by persons in buildings only, although persons out of doors heard the noise. Crockery, etc. rattled on the shelving and pictures suspended from the walls swung to and fro. The movement of the latter indicating that the direction of the shock was from northeast to southwest. Near the town of Bradford, eight miles distant, the water in a small stream near that place was forced upward, in the form of a water-spout, to a height of several feet.

Meridian, New Haven county: an earthquake shock was plainly felt at 2 p. m. on the 10th. The wave passed from southwest to northeast. At Waterbury the shock lasted for about thirty seconds, and pictures on the walls swung to and fro.

Hartford, Fairfield county: at 2.09 p. m. of the 10th an earthquake shock occurred, which caused considerable excitement. Persons were frightened from their dwellings, and ornaments, etc. were broken. At Bridgeport the shock is reported to have lasted fifteen seconds and was accompanied by a loud, rumbling noise. At Stratford, Fairfield county, two chimneys were thrown down. The water in the Housatonic river was violently agitated. Large waves were observed to recede from the shores and meet in the centre of the river, forming a peculiar spectacle.

Norwich, New London county: a sharp shock of earthquake was felt here, and in the neighboring towns at about 2 p. m. on the 10th. Houses were perceptibly shaken, and bells were rung. Many persons were alarmed but no damage was done. At New London two shocks were felt and were of force sufficient to move furniture, etc.

Hartford: at 2.39 p. m. on the 10th, three long and convulsive earthquake shocks were felt throughout this city and vicinity, the disturbance being most severe in the higher localities. Many persons were thrown down, and in some cases slight bodily injury occurred. At the second shock bells were rung, houses violently rocked, and all crockery and glassware were thrown down. Great alarm prevailed among the people who ran from the houses into the streets. One man was thrown from his wagon when the second shock occurred. At the jail, which was crowded with prisoners, a panic ensued and one of the inmates died from fright. At the state prison in Weathersfield, similar confusion prevailed.

Delaware.—Delaware Breakwater: at about 2.10 p. m. of the 10th a slight earthquake shock was felt at this place. The station building was suddenly shaken for about five seconds.

Wilmington: at 1.51 p. m. on the 10th an earthquake shock occurred which shook buildings sensibly throughout the city. The direction of movement was about 10° north of east.

District of Columbia.—The following extract is from the "New York Herald" of August 11th:

WASHINGTON, D. C., August 10, 1884.—Commander Sampson, assistant superintendent of the Naval Observatory, reports that he observed slight vibrations of the earth about two o'clock this afternoon, lasting about sixteen seconds. He was in the second story of his house, adjoining the observatory. The windows of the room rattled, and the articles on a marble-topped table moved. No phenomena were observed on the lower floors of the house. A few persons have reported this evening that they observed some unusual motion of the earth about two o'clock this afternoon, but very few such reports have been made.

Maryland.—Fallston, Harford county: the earthquake shock of the 10th was felt at Jerusalem Mills, two miles south of this place.

Baltimore: a slight earthquake shock was felt in some parts of this city at about 2.10 p. m. on the 10th. It was felt only in the most elevated localities, and was not perceptible along the river front and over the made ground of the city. Reports from Mechanicsburg, Frederick county, state that a slight shock was felt at that place.

Rockville, Montgomery county: at 2.15 p. m. of the 10th, an earthquake was sensibly felt in all parts of the town and at adjacent points in this county. At a residence three miles from Rockville, persons were awakened from sleep, and articles in the rooms were disarranged. The shock was also felt at points between Rockville and West Washington, District of Columbia.

Massachusetts.—Williamstown, Berkshire county: a slight earthquake occurred at 2.02 p. m. of the 10th. At Lanesborough, fifteen miles south, glasses were overturned.

Worcester, Worcester county: a slight earthquake shock was felt in this city at 2.06 p. m. of the 10th. At the State insane asylum the shock was more perceptible than elsewhere in this vicinity.

The following extract is taken from the "New York Herald" of August 11th:

Boston, August 10, 1884.—No less than six distinct shocks were felt in this section this afternoon. Professor Pickering, of Harvard Observatory, says he first noticed a tremulous movement of the earth followed by the swaying of the building and creaking of the timbers. The shock was first noticed about seven minutes past two p. m., continuing about ten seconds. He has no record of previous shocks, their duration being so short as to make it impossible to compute accurately their extent or duration.

The shocks were plainly felt throughout the city, the jar being clearly defined in the outlying districts, and the occupants of second story tenements felt the shock more plainly than those on the ground floors.

Springfield: an earthquake shock occurred at 2.08 p. m., on the 10th. There were several marked pulsations lasting about ten seconds. The shock was also felt at Pittsfield and northward along the Connecticut river to Brattleboro, Vermont.

Taunton, Bristol county: a tremor of the earth was felt about 2 p. m. of the 10th; it was very slight but was felt at numerous places in this neighborhood.

Amherst, Hampshire county: a slight earthquake shock occurred at 2 p. m., of the 10th.

Milton, Norfolk county: an earthquake occurred at 2.09 p. m., on the 10th; the undulations were very sensibly felt, and caused windows to rattle.

Somerset, Bristol county: two very slight tremors of the earth occurred at 2.08 p. m., of the 10th.

New Jersey.—South Orange, Essex county: a slight earthquake occurred at 2.08½ p. m., of the 10th, lasting five or six seconds.

Somerville, Somerset county: two slight shocks of earthquake, separated by an interval of about ten seconds, occurred at about 2 p. m. on the 10th.

Sandy Hook: at 2.05 p. m. of the 10th an earthquake, accompanied by a deep rumbling noise, occurred. In the Western Union telegraph building the contents of the battery cells were thrown out.

Little Egg Harbor: at 2.07 p. m. of the 10th an earthquake

shock of about ten seconds duration occurred, causing the signal office building to tremble considerably; the vibration was apparently from north to south.

Atlantic City: at 2.07 p. m. on the 10th three light shocks of earthquake were felt in this city. The shocks were of about two seconds duration and the movement was apparently from northeast to southwest. The timbers of the building in which the signal office is located cracked, and light articles were displaced.

Barneget City: at 2.07 p. m., on the 10th, an earthquake shock was felt at this station and in the surrounding country. The trembling of the earth was scarcely perceptible. The movement was apparently from north to south and lasted about seven or eight seconds. No effect on the ocean was caused by the shock, so far as could be determined by the observer.

Paterson, Passaic county: three shocks of earthquake were felt on the 10th, occurring at 11.15 a. m. and 1.45 and 2.08 p. m., respectively. The first two shocks were very slight, but the third was quite severe and caused much alarm throughout the city.

Newark: at 2.10 p. m. of the 10th, an earthquake occurred, lasting ten seconds. There was at first a slight tremor, and then a continued and decided convulsive movement that finally died away in gentle tremors. Every building in the city was affected by the shock, and many persons were frightened from their dwellings into the streets. The disturbance was noticed upon all the waters about Newark, the smooth surface becoming suddenly agitated.

Bordentown, Burlington county: at 2.08 p. m. on the 10th, an earthquake shock occurred which lasted about thirty seconds. The shock was most severe on a neighboring hill, where several children were thrown down. Persons who were at the shores of the Delaware river, state that the shock produced a large wave.

Elizabeth, Union county: the earthquake of the 10th began exactly at 2.07 p. m. and lasted one-half minute. The direction was from south to north; the shock increased in violence from the beginning for about fifteen seconds and then gradually decreased.

Vineland, Cumberland county: at 2.15 p. m. of the 10th two slight shocks of earthquake, of about ten seconds' duration, were felt.

New York.—Albany: at 2.10 p. m. of the 10th an earthquake occurred, lasting several seconds. The shock was, apparently, most severe in the western part of the city.

New York City: the earthquake of August 10th, occurred at 2.14 p. m., true local time, and lasted ten seconds. There were three shocks, of which the second was the most violent, and the third the most feeble. In many of the thickly populated tenement-house districts of this city, the shock caused much alarm. In the neighboring cities the shock was similar to that experienced in New York City. It is stated that on Long Island the shock was violent enough to shake apples and peaches from the trees. So far as can be learned the waters of the rivers bounding the city were not disturbed by the earthquake. The pilots, deck hands, and passengers of the ferry boats which were crossing at the time, state that they did not observe a swell greater than that caused by the light breeze blowing, and did not know that the shock had occurred until they reached the shore. Although the water in North and East rivers was apparently unaffected there was considerable disturbance in the bay, where the water became agitated and presented the appearance of having been disturbed by a strong wind. On some of the ferry boats plying in the bay, the shock caused the chains and ropes to shake. The yacht "Penguin," off Fire Island, five miles east of Jones' Inlet, and one mile from the shore, reports that a deep rumbling sound was heard at the time of the earthquake.

The general direction of the earthquake wave appears to have been from 10° north of east to about 10° south of west.

Port Jervis, Orange county: two earthquake shocks, oc-

curing in quick succession and lasting about thirty seconds, were felt at about 2.30 p. m. of the 10th. Substantial buildings were perceptibly shaken by the shocks.

Poughkeepsie, Dutchess county: at about 2.15 o'clock on the afternoon of the 10th a severe earthquake shock occurred in the region along the Hudson river. In many houses in Poughkeepsie, crockery, ornaments, etc., were thrown to the floors. Boatmen report that the shock was not perceptible on the Hudson river in the vicinity of Poughkeepsie.

At Matteawan, Dutchess county, the shock was distinctly felt and is reported to have been of about ninety seconds duration.

Nyack, Rockland county: at 2 p. m. of the 10th a violent commotion of the earth was felt here, apparently moving from southwest to northeast.

Peekskill, Westchester county: at 2.07 p. m. on the 10th two severe shocks of earthquake occurred, which were accompanied by a low, rumbling sound, resembling the passing of heavy artillery over a hard road. Windows, crockery, etc., were considerably shaken by the shocks, which were of about two seconds duration; the vibration was from east-northeast to west-southwest. At Chappaqua, Westchester county, the shock caused large trees to sway back and forth, and buildings were violently shaken.

Phoenicia, Ulster county: at 2.10 p. m. of the 10th this place was considerably shaken by an earthquake shock.

Newburg, Orange county: a light earthquake shock, lasting three or four seconds, was felt in this locality at 2.10 p. m. on the 10th. The disturbance was most perceptibly felt on the brow of the hills; it was felt along the river front also, but not so plainly as on the hill tops. In some houses light articles were moved, and chandeliers swayed to and fro. In some sections of this city the vibrations were so slight that they were unnoticed.

Troy, Rensselaer county: at about 2 p. m. on the 10th, an earthquake shock, lasting about one minute, was plainly felt in different parts of this city. At points along the line of the Troy and Boston railroad the shock was plainly felt.

Pennsylvania.—Haverford College, Montgomery county: at 2.08 p. m. of the 10th, a decided shock of earthquake of about fifteen seconds' duration occurred. The wave was apparently from the northeast.

Titusville, Crawford county: a slight shock of earthquake occurred on the afternoon of the 10th. In the Hotel Brunswick at this place, chairs were moved and windows rattled.

Bath, Northampton county: two distinct earthquake shocks were felt at this place at 2 p. m. of the 10th. Each lasted about one second and were separated by an interval of about one second.

Wilkesbarre: on the afternoon of the 10th an earthquake shock occurred at this place. Four or five distinct undulations were felt in quick succession. No serious damage was done, but buildings were considerably shaken.

Philadelphia: at about 2.12 p. m. (standard time) on the 10th this city and surrounding country were shaken by an earthquake, which, according to various estimates, lasted from four to eight seconds. The movement is described as having been more of a vibration, or a tremor, than a shock, but houses were shaken with more or less violence, bells were rung, window-sashes rattled, and a few weak chimneys were demolished. In the signal office the chandeliers, which were suspended so as to move freely in any direction, were observed to swing from north to south, describing an arc of about one foot.

A small island in the Delaware river, on which Ridgeway Park is situated, was violently shaken, and the water in the river was considerably agitated.

Harrisburg, Dauphin county: a slight earthquake shock was felt in this city on the afternoon of the 10th. It was preceded by a low rumbling noise. No damage was done, but buildings were shaken and small articles were displaced.

Chester, Delaware county: this place was sensibly shaken by an earthquake at about 2.15 p. m. on the 10th. Several chim-

neys were thrown down, crockery was broken, and the plastering shaken from the ceilings.

Allentown, Lehigh county: two distinct earthquake shocks were felt shortly after 2 p. m. on the 10th. There was a general rocking of buildings, and a chimney was thrown down. In some instances the movement was so violent that persons sleeping on lounges were thrown to the floor.

Easton, Northampton county: an earthquake shock was felt through the Lehigh valley on the afternoon of the 10th.

York, York county: an earthquake shock was perceptibly felt in this city about 2.15 p. m. on the 10th; houses were shaken, and furniture, crockery, etc., were moved.

Lancaster, Lancaster county: a distinct earthquake shock occurred soon after 2 p. m. on the 10th. The buildings were only slightly shaken.

Phoenixville, Chester county: at about 2 p. m. on the 10th, an earthquake shock, lasting ten seconds, was felt here. Reports from stations along the Pickering valley railroad state that the shock was also felt at points along that road.

Reading, Berks county: at 2.12 p. m. on the 10th, two distinct shocks of earthquake were felt throughout this city and county. The people were considerably alarmed, many running into the streets. Houses were shaken so violently as to cause the window blinds to fall to the ground.

Pottstown, Montgomery county: a very perceptible tremor or rocking of the earth occurred about 2 p. m. on the 10th. The shock lasted two or three seconds and caused houses to shake with such violence as to move furniture, crockery, etc.

Norristown, Montgomery county: a perceptible earthquake shock was felt shortly after 2 p. m., on the 10th. The windows in the houses in all parts of the town rattled violently. A chimney was thrown from a dwelling, and the cell doors of the county prison shook with such violence as to considerably alarm the inmates.

Rhode Island.—Narragansett Pier: a light shock of earthquake occurred at about 2 p. m., of the 10th. It was felt by persons in the upper portion of large buildings.

Point Judith: two very slight shocks of earthquake were felt at 2.12 p. m., on the 10th; they were of about three and two seconds duration, respectively, and were separated by an interval of one second. The building in which the Signal office is located was gently shaken, the direction of vibration being from north to south. The shock was so slight that only a few persons noticed it.

Providence: an earthquake shock occurred at 2.10 p. m., on the 10th, lasting nearly one minute. Bells were rung and crockery broken. Considerable alarm was caused by the shock.

Vermont.—Brattleborough, Windham county: two distinct shocks of earthquake were felt here at 2.10 p. m. of the 10th. The motion was apparently from south to north. Houses were shaken, crockery rattled, and the people were considerably alarmed.

Virginia.—Richmond: a few persons residing in the western part of this city, claim to have felt a slight shock on the afternoon of the 10th, about the time of the occurrence of the earthquake at northern points.

Fort Myer (near Washington, District of Columbia): the earthquake shock on the afternoon of the 10th, was felt at this place.

The observer at Knoxville, Tennessee, reports that an earthquake shock, lasting about six seconds, occurred in that vicinity at 7.45 p. m. on the 24th. It was accompanied by a low rumbling sound like distant thunder, and was sufficient to cause windows to rattle.

"The Nautical Gazette" of September 18, 1884, publishes the following:

The American brig "Charles Dennis," Captain Connacher, from Friendship, Me., arrived at Pensacola on Monday last, after a passage of forty-two days. On August 15th, in latitude 38 degrees north, longitude 75 degrees west, about 5 degrees off shore, she encountered a marine earthquake, which is supposed to have been a sequence of the one which shook up New York and New England. The brig was on the eastern edge of the Gulf Stream. The appearance of the sky denoted a hurricane, consequently the brig was put

under short sail. The wind veered to every point of the compass and then lulled. Suddenly a roar of the sea, deeper than the loudest thunder, was heard. It boiled like a pot, heaving up great seas that tossed the brig like an egg-shell now on the crest of a wave and then in the trough, her foreyard crossing to the water on either side. When the commotion was over it was found that the foremast was sprung, the foretopmast head carried away, and the vessel seriously crippled. After fishing the foremast the captain proceeded on his voyage, meeting with no more mishaps. The earthquake must have had its centre some four hundred or five hundred miles east of Hatteras.

METEORS.

Numerous meteors have been observed during the month; the reports of observations are given below, that furnished by Prof. C. G. Boerner, of Vevay, Indiana, being especially interesting:

Arizona.—Fort Apache, 9th: from fifteen to twenty meteors were observed between 8.05 and 9.25 p. m.; the general direction of their flight was from east of north to west of south; two of them were unusually large and brilliant.

Arkansas.—Lead Hill, 10th, 11th, 13th, 19th, 20th, 24th, 28th, and 30th.

Connecticut.—Bethel, 6th, 28th.

Dakota.—Webster, 18th: four bright meteors were observed within ten minutes.

Florida.—Archer, 28th.

Illinois.—Anna, 10th: at 8 p. m. several meteors were seen passing from north to south.

Indiana.—Wabash, 14th: at 7.05 p. m. a small but very brilliant meteor appeared about 40° above the s. horizon and moved slowly in a ssw. direction; it disappeared when about 10° above the horizon. At 8.10 p. m. of the 19th a small but brilliant meteor appeared northeast of Arcturus and descended to the southwestward, disappearing when about 15° above the horizon.

Logansport, 17th, 18th, 19th, 20th.

Vevay: Professor Charles G. Boerner reported as follows: 10th, from 8.23 to 9.40 p. m., sixteen meteors of more or less brilliancy were observed; they moved in various paths, the duration of flight not exceeding two seconds. At 9.40 p. m. the bright full-moon had attained an altitude to obscure all stars below the first magnitude, and meteors became altogether invisible, watching was therefore discontinued. On the 11th, from 8.46 to 9.15 p. m., six meteors were observed. On the 12th, from 8.03 to 8.45 p. m. four meteors were observed; at 9.30 p. m., no other meteors appearing, watching was discontinued.

Referring to the above, Professor Boerner states: "The total number (26) of meteors were observed on the nights of the 10th, 11th, and 12th; of these eighteen were conformable to the radiant in Perseus, and eight non-conformable.

Of the above number there were thirteen of the first magnitude with an average duration of flight of 2.1 seconds; eight of the second magnitude with an average duration of flight of 1.3 seconds; five of the third magnitude with an average duration of flight of 1.2 seconds. The maximum number fell on the 10th, with a gradual decrease on the 11th and 12th; only two were followed by long luminous trains; of the remainder the trains were short and not well defined. It may reasonably be supposed that a larger number would have been visible on a dark night, unfortunately, as it was, the opportunity was prevented by the interposing moon."

Indian Territory.—Cantonment, 12th: a few meteors were seen early in the evening. 13th, a few meteors were observed in the early part of the night.

Iowa.—Burlington, 12th: a brilliant meteor was observed at 9.05 p. m., passing from the zenith in a southerly direction and leaving a trail resembling the tail of a comet. 21st, a meteor was seen moving in a northeasterly direction. 27th, a brilliant meteor was observed moving in a southerly direction.

Davenport, 9th: a meteor was observed in the southern sky. 23d, a meteor was observed moving from south to north; another was also seen on the same evening moving from north to south.

Fort Madison, 21st: a meteor passed over the station at 10 p. m. moving from south to north and of the size of a lighted lamp; a train of sparks followed its downward course.

Monticello, 21st: a bright meteor was observed in the southwest at 9 p. m.

Kansas.—Allison, 30th: at 9 p. m. several small meteors were observed. Fort Scott, 18th.

Louisiana.—Liberty Hill, 7th: at 7.30 p. m. a meteor was observed passing from east to west.

Maryland.—Fallston, 20th: at 9.30 p. m. a bright meteor was observed in the constellation Ursa Major; it moved horizontally towards the west, leaving a trail about 20° long.

Woodstock: 12th, 15th, 16th, 17th, 20th, 21st, 24th.

Massachusetts.—Rowe, 13th: several meteors were observed between 8.45 and 9.15 p. m.

Fall River, 19th: a meteor was visible at 9.30 p. m., about 30° above the horizon, and moving from north to south, showing green and yellow colors.

Michigan.—Escanaba, 19th: numerous meteors were observed on this date; (twenty-three were counted in thirty-five minutes).

Ionia, 19th: at 8.30 p. m., a meteor was observed in the southwest at an altitude of 30°.

Nebraska.—Tecumseh, 3d; Yutan, 24th, 25th; Red Willow, 26th.

New Jersey.—Moorestown, 15th.

New York.—Factoryville, 19th: at about 9.45 p. m., a large meteor passed over the station, moving from northeast to southwest; its apparent diameter was about eight to ten inches.

Menand Station (near Albany), 19th: at 9.30 p. m., a meteor was observed to pass from near the zenith to the southwestern horizon. Its appearance resembled a large blue star, followed by a long train of light.

Phelps, 1st: Professor Brooks, of the Red House Observatory, about 2 a. m., observed a magnificent meteor moving from near the zenith toward the west. It was of extraordinary brilliancy, illuminating the country as if by an electric light, leaving a train of sparks forty degrees in length. It was visible several minutes, and with the telescope was seen to roll and curve like a wreath of smoke, with a slow motion northward.

Hannibal, 19th: a brilliant meteor was seen at 9.30 p. m. It started from Venus and traveled southwest, leaving a train, broken at intervals, and of a pale blue color.

Le Roy: 12th, 13th.

North Carolina.—Brevard, 15th: meteors passing from south to north were observed on this date; they were also seen on the 18th moving in the same direction.

Chapel Hill, 20th: a very bright meteor was observed in the south about 45° above the horizon; it fell toward the horizon in a sudden burst of light, leaving a trail visible for a few seconds.

Kelley's, near Raleigh, 17th, 18th.

Ohio.—Cincinnati, fourteen meteors were observed between 9 and 10 p. m. of the 8th, their general course being from east to west. Ten meteors were also observed between 9 and 10.30 p. m. on the 10th.

Toledo, 22d: from 8 p. m. to midnight of the 22d shooting stars were numerous, the greater number appearing in the southeastern sky. They were also observed between the same hours on the 23d.

College Hill, 14th, 19th; Jacksonborough, 23d.

Oregon.—Albany, 9th, 10th.

Pennsylvania.—Pittsburg, 10th: meteors were observed passing from north to south; they were also seen on the 15th and 17th.

Leetsdale, 10th: at 9 p. m. a brilliant meteor was visible for about three seconds; the head was of light blue color, followed by a luminous red trail which remained visible for about fifteen seconds. At 10.07 p. m. a small meteor shot from northwest to southeast; it was of a silvery white color and left no trail, but appeared to be very low and to travel rapidly.

Dyberry, 11th: at 9 p. m. about a dozen small meteors were seen, mostly in the south.

South Carolina.—Stateburg, 9th: at 9 p. m. two meteors were observed; they moved from north to south and from northeast to southwest, respectively. On the 11th, at 9 p. m., two bright meteors were observed within a few seconds interval of each other; they moved in nearly parallel and horizontal lines from northeast to southwest. 15th, 9 p. m., a meteor was observed.

Tennessee.—Knoxville, 23d: numerous meteors were observed after 8 p. m., the direction of movement in every case being from east to west. On the 25th several meteors were observed during the evening.

The following extract is taken from the August report of the "Tennessee Weather Service."

Meteors were observed as follows: Xenophon, 9th, 11th, 13th; Parkville, 19th, large, in east, direction west. Riddleton, 12th, 9 p. m., in east, direction west; on 18th, at 10.30 p. m., direction west; on 19th, 1.30 a. m., in west; 26th, at 8.35 p. m., in south, direction southeast. Hardison's Mills, 10th (two); 15th, 9 p. m. Hurricane Switch, 15th; Centreville, 29th, about 8.30 p. m., large and brilliant, crossing the heavens from the zenith to the southern horizon. Dyersburg, 24th, beautiful blue color.

Texas.—Indianola, 9th: at 9.20 p. m., meteors were seen shooting across the southern sky at an altitude of 25°.

Virginia.—Marion, 10th: at 9.30 p. m., three meteors were seen, one moved from north to south, and the others from east to west. On the 12th, three meteors observed.

Cape Henry, 19th: three meteors were observed between 8 and 9 p. m.

Chincoteague, 5th; Variety Mills, 20th, 23d, 24th.

Washington Territory.—Dayton: an unusual number of shooting stars were observed during the month.

Wisconsin.—Milwaukee, 10th: a brilliant meteor was observed at 7.50 p. m., in the north, at an altitude of about 45°; it moved toward the southwest and disappeared, leaving a long trail of light which remained visible for from ten to fifteen seconds. Other meteors, moving toward the southwest, were observed during the night.

Beloit, 19th.

WATER SPOUTS.

Key West, Florida: on the 22d at about 4.30 p. m. three water spouts were observed about three miles north of this station. They moved rapidly southward, remaining visible about twenty minutes. The agitation of the water was plainly seen, but no noise was heard.

Mobile, Alabama: a water spout is reported to have been observed near Fort Morgan on the 10th.

The "New York Maritime Register," of September 10th, reports the following:

The schooner "Wilaka," which arrived at Saint John, New Brunswick, September 3d, from Pensacola, reported that on August 26th, in latitude 33° 30' N., longitude 76° 28' W., she sighted three water spouts. Two of them appeared together and the other a few minutes later. The wind was northeast at the time, blowing moderately, with rain squalls. The sight was a grand one, as the spouts kept their cone-like shape a long time.

The following extract is taken from the "New York Herald," of August 30, 1884:

Quebec, August 27, 1884: a magnificent water spout was seen on the Saint Lawrence river, at Port Neuf, during a severe thunder storm to-day. It was fully formed and afforded a spectacle seldom seen except at sea. During its continuance it moved down the river for a distance of more than two miles, and it parted opposite Point Platon. Rain descended in torrents immediately afterward.

PRAIRIE AND FOREST FIRES.

Denver, Colorado: reports received at this place on the 8th, stated that prairie fires had burned over an area thirty miles in length along the Platte river, between Denver Junction and Frenchman. The stock interests in that region sustained heavy losses.

East Tawas, Iosco county, Michigan 22d: forest fires have caused great injury to the crops in this county, much standing grain and stacked hay having been consumed, together with other property. It is estimated that an area of 5,000 acres

Meteorological record of voluntary observers and army post surgeons—August, 1884.

Temperature				Temperature				Temperature				Temperature						
District and station.				District and station.				District and station.				District and station.						
Mean.	Maximum.	Minimum.	Rainfall.	Mean.	Maximum.	Minimum.	Rainfall.	Mean.	Maximum.	Minimum.	Rainfall.	Mean.	Maximum.	Minimum.	Rainfall.			
New England.																		
Hartford, Conn.	95	42	2.87	Mid. Atlantic States—Cont'd														
Bethel, Conn.	66	89	4.4	Great Falls, Md.	74	92	58	1.73	Lower Lake Region.							Missouri Valley—Cont'd.		
Orono, Me.	66	89	4.4	West Washington, D. C.	67	93	36	0.58	Margaretta, Ohio.	72	92	51	1.71	Pierce City, Mo.	71	91	52	3.79
Cornish, Me.	67	87	4.53	Wytheville, Va.	67	93	36	2.40	Hiram, Ohio.	70	90	55	1.63	Greenfield, Mo.	74	96	50	0.50
Amherst, Mass.	69	92	4.8	Factoryville, N. Y.	67	93	36	2.07	Cleveland, Ohio.	68	88	48	1.90	Atchison, Kans.	72	94	54	4.20
Dudley, Mass.	69	92	4.8	White Plains, N. Y.	72	95	55	6.64	North Lewisburg, Ohio.	72	92	48	0.80	Harrisonville, Mo.	76	98	63	2.30
Mendon, Mass.	68	87	5.5	Salem, N. J.	95	95	2.47	Wauseon, Ohio.	68	94	39	1.12	Manhattan, Kans.	74	100	54	5.02	
Milton, Mass.	68	87	5.5	Fort Columbus, N. Y.	72	92	58	8.72	Palermo, N. Y.	66	90	46	2.19	Independence, Kans.	73	96	53	5.83
New Bedford, Mass.	67	81	5.2	Fort Monroe, Va.	75	90	64	3.12	Humphrey, N. Y.	65	90	48	4.80	Wyandotte, Kans.	70	93	48	5.63
Somerset, Mass.	72	91	4.4	Madison Barracks, N. Y.	68	88	43	2.69	Ithaca, N. Y.	69	91	39	3.75	Fort Scott, Kans.	74	95	60	4.71
Princeton, Mass.	66	89	4.3	Plattsburg B'ks, N. Y.	79	96	42	2.19	Penn Yan, N. Y.	65	95	49	3.20	Salina, Kans.	75	84	65	3.09
Westborough, Mass.	66	89	4.3	David's Island, N. Y. H.	73	94	37	5.05	North Volney, N. Y.	65	95	49	3.20	Emporia, Kans.	72	93	51	4.43
Taunton, Mass.	69	93	5.0	Fort McHenry, Md.	90	97	1.62	Hudson, Mich.	64	95	40	1.29	Shellock, Kans.	77	90	56	8.20	
Fall River, Mass.	68	83	4.7	South Atlantic States.				Mount Forest, Ont.	66	90	43	3.54	Yates Centre, Kans.	73	100	47	1.51	
Worcester, Mass.	68	87	4.5	Lenoir, N. C.	86	61	.....	Fort Niagara, N. Y.	68	92	45	0.55	Clay Centre, Kans.	72	96	55	5.08	
Antrim, N. H.	68	83	4.7	Lincolnton, N. C.	73	77	70	.....	Upper Lake Region.				Westmoreland, Kans.	71	95	48	5.75	
Weir's Bridge, N. H.	68	83	4.7	Raleigh, N. C.	77	91	72	3.60	Manitowish, Wis.	65	84	45	4.81	Logan, Iowa	96	50	5.00	
Lake Village, N. H.	68	83	4.7	Highlands, N. C.	64	82	52	4.03	Wausau, Wis.	63	86	38	4.62	Webster, Dak.	71	95	43	0.41
Bristol, N. H.	68	83	4.7	Flat Rock, N. C.	66	82	55	3.51	Ripon, Wis.	67	85	47	4.62	Marquette, Nebr.	78	90	66	1.70
Ashland, N. H.	68	83	4.7	Statesville, N. C.	78	91	61	1.35	Embarras, Wis.	67	86	52	7.70	W. Leavenworth, Kans.	73	94	52	5.50
Woodstock, N. H.	68	83	4.7	Weldon, N. C.	75	92	62	1.86	Sussex, Wis.	65	87	46	3.14	Topeka, Kans.	71	95	51	5.36
Belmont, N. H.	68	83	4.7	Chapel Hill, N. C.	76	99	56	4.64	Franklin, Wis.	66	90	45	2.94	Guttenberg, Iowa	66	90	48	4.59
Wolfborough, N. H.	68	83	4.7	Brevard, N. C.	71	90	54	2.57	Beloit, Wis.	66	90	45	2.94	Fort Robinson, Nebr.	70	97	42	1.00
Providence, R. I.	63	98	5.4	Milledgeville, Ga.	92	61	3.38	Hillsdale, Mich.	66	93	39	0.62	Fort Sisseton, Dak.	95	86	41	4.27	
Charlotte, Vt.	67	94	4.3	Athens, Ga.	75	92	59	2.62	Swartz Creek, Mich.	66	90	37	0.95	Fort Sully, Dak.	71	99	48	0.72
Burlington, Vt.	67	94	4.3	Stateburg, S. C.	76	91	60	3.29	Ionia, Mich.	65	92	39	0.55	Rocky Mountain Slopes.				
Woodstock, Vt.	67	96	3.8	Florida Peninsula.				Marshall, Mich.	63	93	43	1.08	Red Willow, Nebr.	74	96	47	5.24	
Dorset, Vt.	65	93	3.5	Archer.	79	99	71	5.35	Northport, Mich.	92	54	3.25	Stockham, Nebr.	80	92	68	2.70	
Lunenburg, Vt.	65	97	4.0	Mayport.	86	63	6.32	Manistique, Mich.	61	84	35	4.50	Maud, Kans.	94	58	3.63		
Newport, Vt.	68	92	4.2	Tallahassee.	81	91	71	8.28	Traverse City, Mich.	93	41	2.35	Wellington, Kans.	70	97	57	3.44	
Stratford, Vt.	73	90	5.0	Lincolna.	81	96	71	8.28	Kalamazoo, Mich.	92	44	1.82	Allison, Kans.	68	95	48	3.14	
Rowe, Mass.	66	88	4.6	San Augustine.	79	91	70	10.02	Thornville, Mich.	68	93	49	1.47	Pueblo, Colo.	70	91	54	2.35
Williams College, Mass.	66	88	4.6	Eastern Gulf States.				Mendon, Mich.	96	41	1.87	Tucson, Ariz.	87	113	50	1.15		
Gardiner, Me.	64	83	4.5	Green Springs, Ala.	77	96	64	1.04	Fort Wayne, Ind.	71	96	52	0.95	Fort McDowell, Ariz.	87	113	50	1.18
Middle Atlantic States.																		
Dale Enterprise, Va.	72	93	5.6	Luling, Ala.	82	95	63	0.86	Lycansport, Ind.	72	93	51	1.83	Fort Lewis, Colo.	60	87	38	2.86
Wytheville, Va.	76	86	4.8	Forsyth, Ga.	79	96	68	2.39	Springfield, Ill.	66	87	51	3.43	Fort Concho, Tex.	82	103	60	0.96
Variety Mills, Va.	71	92	5.4	Fort Barrancas, Fla.	84	96	67	2.39	Marion, Ill.	66	80	47	3.30	Fort Fred Steele, Wyo.	65	91	38	0.70
Accotink, Va.	76	96	0.1	Mt. Vernon B'ks, Ala.	81	101	58	4.98	Sandwich, Ill.	71	94	51	1.93	Fort Randall, Dak.	71	96	44	2.39
Blackburg, Va.	76	96	0.1	Western Gulf States.				Wilcox, Ill.	70	92	50	3.31	Fort A. Lincoln, Dak.	68	96	42	4.18	
Summit, Va.	74	98	5.5	Cleburne, Tex.	85	98	56	0.62	Lansing, Mich.	93	42	1.34	Fort Keogh, Mont.	71	103	39	1.76	
Johnsonton, Va.	78	91	0.7	New Uln, Tex.	83	96	79	0.21	Fort Brady, Mich.	62	88	35	4.29	Fort Ellis, Mont.	65	93	37	1.10
Wellsborough, Pa.	67	93	3.0	Clarksville, Tex.	80	101	66	4.65	Extreme Northwest.				Fort Union, N. Mex.	64	92	43	7.80	
Fallsington, Pa.	72	93	5.6	Austin, Tex.	85	98	68	0.04	Richardton, Dak.	64	91	49	6.40	Fort Shaw, Mont.	64	92	37	0.59
Quakertown, Pa.	68	88	4.5	Grand Coteau, La.	81	96	67	1.75	Fort Yates, Dak.	69	96	45	2.45	Fort Meade, Dak.	63	96	34	2.30
Drifton, Pa.	66	91	4.9	Liberty Hill, La.	95	95	83	.....	Fort Buford, Dak.	70	102	39	0.25	Fort Assiniboine, Mont.	82	95	37	2.50
Troy, Pa.	66	92	3.3	Mount Ida, Ark.	75	103	52	1.05	Fort Totten, Dak.	65	94	44	5.94	Fort Lyon, Colo.	73	104	42	1.70
Easton (Lafayette Col.), Pa.	66	92	3.3	Lead Hill, Ark.	76	100	52	4.78	Upper Mississippi Valley.				Platteau Districts.					
Dyberry, Pa.	66	90	3.4	Fayetteville, Ark.	71	88	50	3.77	Neillsville, Wis.	59	89	37	6.32	Carson City, Nev.	68	95	39	0.62
Catawissa, Pa.	66	93	4.5	Point Pleasant, La.	80	97	66	0.87	Lancaster, Wis.	67	89	40	5.65	Grand Junction, Colo.	72	104	52	1.62
Westchester, Pa.	70	91	4.9	Rio Grande Valley.				Lancaster, Wis.	67	89	40	5.65	Puerto de Luna, N. Mex.	74	99	63	5.63	
Easton, Pa.	78	.....	.....	Fort Brown, Tex.	84	97	71	0.32	Lancaster, Wis.	67	89	40	5.65	Nephi, Utah.	64	92	40	0.35
Germantown, Pa.	76	96	5.8	Ohio Valley and Tennessee.	.....	.....	.....	Fort Buford, Dak.	70	102	39	0.25	Fort McDermitt, Nev.	71	95	47	.....
Tamaqua, Pa.	76	96	5.8	Wellsburg, W. Va.	.....	.....	.....	Fort Totten, Dak.	65	94	44	5.94	Fort Bridger, Wyo.	63	84	31	2.90	
Chambersburg, Pa.	70	95	5.2	Helvetia, W. Va.	66	90	48	4.30	Monticello, Iowa.	68	90	45	3.78	Fort Wingate, N. Mex.	67	87	43	4.64
Hulmeville, Pa.	74	95	4.8	Marion, Va.	70	88	56	3.27	Des Moines (near) Iowa.	68	90	45	3.78	Pacific Slope.				
Haverford College, Pa.	74	95	4.8	Milan, Tenn.	71	99	54	1.58	Independence, Iowa.	68	84	50	4.75	Poway, Cal.	73	104	59	trace
State College, Pa.	74	95	4.8	Austin, Tenn.	79	95	59	2.29	Ottumwa, Iowa.	69	92	57	4.93	Chahuenga Valley, Cal.	.....	.....	.....	trace
Mountainville, N. Y.	69	95	4.2	Estill, Tenn.	72	93	54	1.93	Manchester, Iowa.	68	90	49	2.42	Princeton, Cal.	77	104	56	trace
Auburn, N. Y.	68	87	4.6	Grampian Hills, Pa.	68	94	50	4.07	Indianola, Iowa.	70	88	55	2.81	Salinas, Cal.	59	70	53	0.18
Menand, N. Y.	71	92	5.0	Leedsdale, Pa.	67	92	46	2.07	Cresco, Iowa.	65	85	51	8.34	Oakland, Cal.	61	78	54	0.25
Leroy, N. Y.	71	94	4.1	Laurensburg, Ohio.	74	99	44	1.20	Fort Madison, Iowa.	65	85	51	8.34	Hillsdale, Cal.	60	80	50	0.02
Cooperstown, N. Y.	66	87	4.3	New Athens, Ohio.	68	92	43	1.08	Muscataine, Iowa.	70	92	43	5.77	College City, Cal.	78	105	55	.....
Fort Jervis, N. Y.	70	92	5.18	Westerville, Ohio.	68	92	43	1.08	Maynard, Iowa.	63	87	48	.....	Sacramento, Cal.	.....	95	53	0.01
Phillipsburg, N. J.	74	92	4.9	College Hill, Ohio.	70	92	51	3.31	Humboldt, Iowa.	66	88	48	4.27	San Raphael, Cal.	.....	90	39	0.09
Somerville, N. J.	72	94	5.3	Portsmouth, Ohio.	72	93	51	1.35	Peoria, Ill.	74	97	50	4.13	Eola, Ore.	67	92	56	0.17
Caldwell, N. J.	76	100	5.6	Frankfort, Ky.	72	90	49	1.66	Collinsville, Ill.	72	94	48	1.82	Albany, Ore.	68	96	52	0.43
Readington, N. J.	76	100	5.6	Richmond, Ky.	71	91	56	1.74	Bunker Hill, Ill.	70	96	45	2.56	East Portland, Ore.	94	50	0.03	
Vineland, N. J.	73	91	4.8	Lafayette, Ind.	70	89	54	1.12	Anna, Ill.	75	92	56	2.65	Pleasant Grove, Wash. T.	95	37	trace	
Moorestown, N. J.	71	93	4.8	Clinton, Ind.	70	90	48	0.75	Swanwick, Ill.	73	93	55	1.04	Bainbridge Isl'd, Wash. T.	65	92	45	1.35
Belvidere, N. J.	70	92	5.0	Laconia, Ind.	72	93	51	4.12	Rockford, Ill.	67	87	51	3.68	New Tecoma, Wash. T.	89	52	1.29	
South Orange, N. J.	70	92	5.0	Terre Haute, Ind.	85	54	1.43	Fort Snelling, Minn.	68	101	45	3.61	Alcatraz Island, Cal.	55	65	48	0.25	
Cumberland, Md.	70	86	5.4	Jeffersonville, Ind.	73	92	53	3.36	Missouri Valley.				Angel Island, Cal.	61	85	52	0.06	
McDonough School, Md.	72	87	5.8	Spiceland, Ind.	70	92	49	0.40	De Soto, Nebr.	69	91	46	5.95	Bonita Baracks, Cal.	68	95	54	0.03
Woodstock, Md.	72	92	4.7	Mattoon, Ill.	73	93	55	2.20	Fremonot, Nebr.	68	86	51	6.73	Fort Bidwell, Cal.	69			

Yates Centre, Kansas, 8th.
Salina, Kansas, 28th.
Wytheville, Virginia, 6th.

SAND STORMS.

Fort Yates, Dakota, 29th.
Fort Assinaboine, Montana, 21st.
Wickenburg, Arizona, 30th.
Fort McDowell, Arizona, 1st, 5th, 12th, 18th, 24th, 25th, 31st.
Lewiston, Idaho, 30th.
Dayton, Washington Territory, 5th, 23d, 30th.

MIGRATION OF BIRDS.

Geese flying northward: Pensacola, Florida, 23d.
Brants flying southward: Fort Smith, Arkansas, 8th.

NOTES AND EXTRACTS.

REPORT OF THE ALABAMA WEATHER SERVICE, UNDER DIRECTION OF PROFESSOR
P. H. MELL, JR.

MECHANICAL AND AGRICULTURAL COLLEGE,
AUBURN, ALABAMA, September 1, 1884.

August opened with five days of showers, accompanied by thunder and lightning and westerly winds. Clear weather began on the 6th, with a decided fall of temperature; and the month continued cool and dry, with winds from the east and north until the 20th, when the wind changed to the west, and the temperature began to rise rapidly, and a few local showers were reported. The week of the 22-29th was the warmest period of the summer. The rains and winds of the 29th and 30th cooled the atmosphere, and the 31st was clear, with cool breezes from the north and west. With the exception of the one hot week the month was pleasant and uniform in temperature, and the average was lower than that of July. The precipitation was also below the average.

Observers are requested to be very careful in measuring the amount of precipitation. The great discrepancy between reports from the same section of the state leads the Director to suppose that more or less error exists in the manner of measuring, or in the rain-gauges themselves.

State summary.

Mean temperature, 75°.6; highest temperature, 102° at Troy, on the 1st; lowest temperature, 52° at Calera, on the 6th; monthly range of temperature for the state, 50°; greatest monthly ranges at stations, 40° at Jacksonville and Fayette, and 48° at Calera; least monthly ranges of temperature, 15° at Wetumpka, and 30° at Evergreen; greatest daily ranges, 30° at Troy, on the 3d; 40° at Birmingham, on the 28th; least daily ranges of temperature, 0° at Eden, on the 7th, and 6° at Mobile, on the 9th.

Mean depth of rainfall for the state, 2.41 inches; mean daily rainfall for the state, 0.08 inch; largest monthly rainfall, 7.85 inches at Clanton; least monthly rainfall, 0.20 at Greensborough; largest daily rainfall, 2.50 at Clanton, on the 4th.

The days of general rainfall were the 1st, 2d, 3d, 4th, 29th, 30th; average number of days on which rain fell, 6; average number of cloudy days, 6; fair days, 15; clear days, 10; warmest day, 29th; coolest day, 6th.

Prevailing directions of the wind, west and northwest; greatest force of wind was reported from Montgomery, on the 4th—27 miles per hour from the northeast.

The following extract is taken from the August report of the "Nebraska Weather Service," under direction of Professor G. D. Sweezy, of Doane College, Crete, Nebraska:

BOSWELL OBSERVATORY, DOANE COLLEGE,
Crete, Nebraska, August, 1884.

With the issue of the monthly bulletin for July, Prof. S. R. Thompson, who has for many years conducted so ably and faithfully the Volunteer Weather Service for Nebraska, retired from its superintendency with the request that the director of Boswell University should succeed him. It has been with something of hesitation that we have undertaken it, mainly because of the pressure of other duties in connection with the college and the observatory. Realizing however the importance of maintaining and if possible, of extending this service, and that not only the director but all the observers connected with the work freely give their services without remuneration, it has seemed hardly generous to decline, especially as the college with its astronomical and meteorological observatory and library seemed better situated on some accounts than any other station in the state to undertake this work.

General Hazen, Chief Signal Officer, U. S. Army, has kindly extended the offer of his valuable assistance, not only in maintaining but in extending the Nebraska Weather Service. In this it is hoped that many who are interested in the weather problems and meteorological history of the state will co-operate. It is especially desired that persons in various parts of the state, especially the newer western and northern portions will volunteer to act as observers in their own localities. Observations with thermometer and rain-gauge, if nothing more, are desirable.

Weather for August.—Average rainfall: southeast section, 4.02 inches; northeast section, 6.34 inches; southwest section, 3.06 inches; northwest section, 2.85 inches; state, 4.06 inches.

Mean relative humidity: Crete, 82.

Mean temperature: for the state, 71°.3. Average of noon observations, 75°.93.

The following are some of the maximum and minimum temperatures:

Stockham, 92°, 68°; De Soto, 91°, 46°; Crete, 93°, 47°.7.

Wind: Number of miles traveled, Crete, 7,219 miles. Average velocity, Crete, 9.7 miles per hour. Highest velocity, Crete, 36 miles, south.

Miscellaneous.—Fogs: Syracuse, 22d and 28th; Weeping Water, 15th and 28th; De Soto, 14th, 24th, and 28th; Crete, 22d, 25th, and 28th; Beaver Creek, 13th, 17th, and 28th; Red Willow, 10th, 11th, 12th, 13th, and 14th.

Thunderstorms: Central City, 15th and 17th; Keene, 16th and 18th; Beaver Creek, 19th, 25th, and 26th; West Point, 15th and 18th; Red Willow, 15th, 17th, and 19th; Marquette, 13th and 26th; Fairbury, 17th; Superior, 12th, 13th, 15th, 17th, 18th, 19th, and 21st.

REPORT OF THE TENNESSEE WEATHER SERVICE, UNDER DIRECTION OF HON. A. J. MCWEHINTER.

The month of August was characterized by but few abnormal features, among which were the cool nights during the early part of the month, the high temperature, during the latter part, the severe electric storms of the 3d and 29th, and the deficiency in the rainfall.

The mean temperature was 73°.6, or 2°.4 below that for the previous month, and 1°.6 above that for the corresponding month of last year. The highest temperature was 99°, or 1° above that for August of last year; the lowest temperature was 48°, or 2° above the July minimum and 5° above that for August, 1883. The mean of the maximum temperatures was 4° above and the mean of the minimum temperatures was 1°.7 above those for August, 1883. The highest temperatures were general during the latter portion, and the low temperatures during the early portion of the month.

The average rainfall for the state was 2.08 inches, or 1.35 inches less than for the corresponding month of 1883, and 3.42 inches less than the average for July, 1884. The days of greatest rainfall were the 3d, 21st, 22d, and 29th. The greatest daily rainfall was 3.10 inches on the 29th, at Xenophon, Hancock county. The rainfall was very irregularly distributed, being general only on the above-named days. Many of the rains were very local. The rain of the 3d was the heaviest in the middle division, and that of the 29th was heaviest in the eastern and western divisions. It is a little remarkable that with so small a rainfall only three days in the month were reported entirely free from rain throughout the state.

The severe drought which set in during the early part of the month has had a very damaging effect on the crops of corn, cotton, and tobacco.

REPORT OF THE MISSOURI WEATHER SERVICE; AUGUST, 1884.

The mean temperature at Saint Louis during the month was 74°.4, or 2° 1 below the normal. There were only four places—Carthage, Harrisonville, and Cairo, in the southern part of the state, and Mascoutah in Illinois—where the mean temperature was above that at Saint Louis. The daily means during the month were with but little range, the highest being on the last days of the second decade of the month and the lowest on the 9th. Throughout the state the means were below the normals.

The higher maximums were observed in the latter part of the second decade, and the lower minimums in the latter part of the first decade of the month.

The mean daily range at the central station was 17°.2, being as small as 6°.6 on the 3d, and as large as 25°.5 on the 13th.

There was no rainfall at Saint Louis until the 20th of the month. It was so generally throughout the state also. The amount at the central station was 2.66 inches below the normal for Saint Louis. The distribution over the state was small in the southern part—0.50 at Greenfield, with a large amount toward the northern part, the largest being 6.52 inches at Miami.

The crops, where heard from, were revived by the late rains and are doing well, not having suffered so much as might have been expected from the lack of rain in the first part of the month on account of the comparatively low temperature.

A. RAMEL, Assistant in charge.

Washington University, September 9, 1884.

REPORT OF THE LOUISIANA WEATHER SERVICE, UNDER DIRECTION OF MR. ROBERT S. DAY.

The early part of the month was comparatively cool, but the last week was very warm. Drought is generally reported in the lowlands. On the hills east of the Mississippi river, where the spring and early summer were dry, good rains have fallen.

The temperature for the month was above the average, but it was not as high as for August, 1883. In New Orleans less rain fell than at any time since the record has been kept. Crops generally have suffered for rain. Cotton is reported shedding. Sugar and rice are spotted, as they have had showers or drought.

State summary.

Mean temperature, 81°.3; highest temperature, 103°.5 at Shreveport and Franklin, on the 29th; lowest temperature, 45° at Lake Providence, on the 4th; greatest daily range of temperature, 45° at Lake Providence, on the 2d; least daily range of temperature, 2°.5 at Vidalia, on the 6th.

Average rainfall, 1.70 inches; greatest daily rainfall, 2.65 inches at Clin-